

Descriptions of New Braconidae (Hymenoptera) Parasitic on the Potato Tuberworm and on Related Lepidoptera from Central and South America

Paul M. Marsh

Systematic Entomology Laboratory, SEA, U. S. Department of Agriculture,
% U. S. National Museum, Washington, D. C. 20560.

ABSTRACT

Six new species of braconids are described: *Orgilus jennieae* and *Chelonus kellieae* from Costa Rica which are being reared in California for possible release against the potato tuberworm; *Chelonus johnei*, *Apanteles oatmani*, *Bracon lucileae*, and *Mirax malcolmi* from Colombia, parasites of *Scrobipalpula* sp. *Orgilus parvus* Turner, previously released into California, is diagnosed and compared to *O. jennieae*.

Descriptions of the following new species of Braconidae are being provided at the request of E. R. Oatman, University of California, Riverside. Two of these species, *Orgilus jennieae* n. sp. and *Chelonus kellieae* n. sp. from Costa Rica, are being studied and reared for release against the potato tuberworm, *Phthorimaea operculella* (Zeller), in Southern California. The other 4 species were collected by Dr. Oatman and colleagues during searches in Colombia for parasites of the potato tuberworm and the tomato pinworm, *Keiferia lycopersicella* (Walshingham). Colonies were not obtained for any of these 4 parasites, but they are described at this time in the event they are collected again for future study.

Orgilus jennieae Marsh, new species

Female. Length of body, 3.5–4.0 mm; ovipositor, 2.5–3.0 mm. Color: head including antennae, thorax and abdomen black; fore and middle

legs with coxa light brown, first trochanter black, second trochanter light brown, femur light brown, black dorsally, tibia light brown but sometimes black on apical $\frac{1}{3}$, tarsus black; hind leg with coxa black basally and light brown apically, first trochanter black, second trochanter brown, femur brown ventrally, black dorsally and laterally, tibia brown on basal $\frac{2}{3}$, black on apical $\frac{1}{3}$, tarsus black; tegula and wing base black, wing uniformly lightly infumated. Head: in dorsal view 1.5 times broader than long, face about 1.25 times as broad as eye height, clypeus strongly convex; frons smooth and polished except for hair pits; ocellocular distance about twice diameter of lateral ocellus; antenna 29 segmented, segments in apical $\frac{1}{4}$ about as long as broad. Thorax: mesonotal lobes smooth and polished except for numerous hair pits, notauli deep and strongly crenulate, scutellar disc smooth and shining, prescutellar furrow deep and with numerous low carinae; propleuron strongly rugose, granular along dorsal edge; mesopleuron smooth and polished, hairless above sternaulus, sternaulus arched and strongly crenulate; propodeum rugose, longitudinal carinae at posterior margin strong, spiracles set into shallow circular impression, sides of propodeum rugose ventrally, granular dorsally. Abdomen: first tergite about 1.5 times longer than apical width, rugulopunctate, smooth

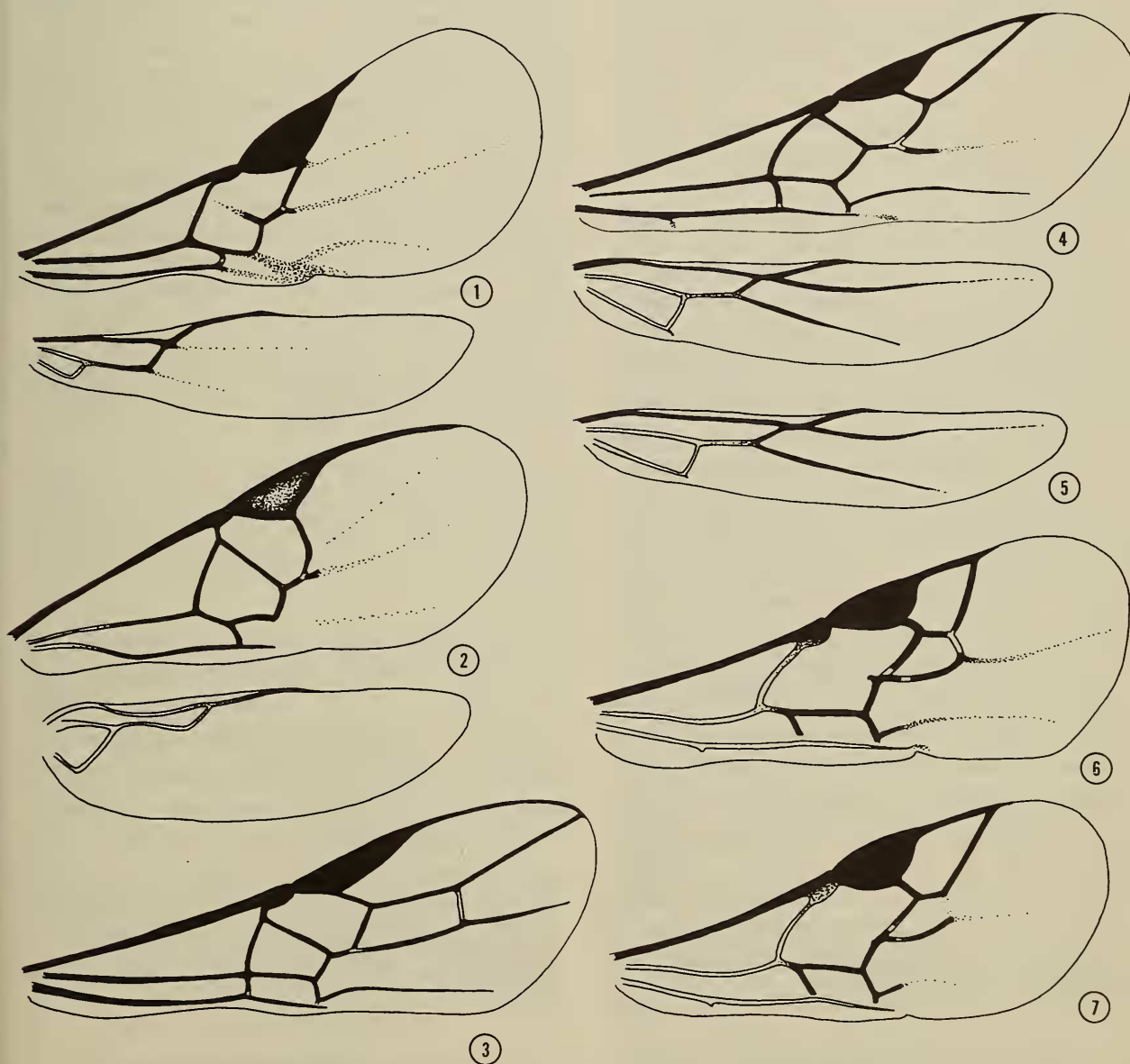
at extreme base, basal longitudinal keels well developed; second tergite about 1.3 times as long as broad at base, finely granular medially, smooth and polished along apical and lateral edges; second suture fine but distinct; remainder of terga smooth and polished; ovipositor about as long as abdomen plus $\frac{1}{2}$ thorax. Wings (fig. 4): radial cell along wing margin as long as stigma; second segment of radius at a slight angle with intercubitus; stub of third segment of cubitus slightly longer than second segment; nervulus nearly interstitial with basal vein, only slightly postfurcal; hind wing 4.5 times as long as greatest width; second segment of mediella slightly longer than nervellus. Legs: hind coxa granular, rugulose dorsally at base; hind femur 4 times as long as wide; inner spur of hind tibia more than $\frac{1}{2}$ as long as basitarsus; tarsal claws simple.

Male. Essentially as in female; apical antennal segments longer than broad.

Holotype.—Female, Cartago, Costa Rica, Central America, IV-24-73, E. R. Oatman collector, ex. *Phthorimaea operculella* on potato. Deposited in the U. S. National Museum (USNM).

Paratypes.—18 ♀♀, 20 ♂♂, same data as holotype; 4 ♀♀, 4 ♂♂, Cartago, Costa Rica, IV-25-73, E. R. Oatman, ex. Gelechiid on potato; 3 ♀♀, 3 ♂♂, Cartago, Costa Rica, IV-19-73, coll. Oatman, ex potato tuberworm. Deposited in USNM and the University of California, Riverside (UCR).

This species is similar to the Nearctic *Orgilus ferus* Muesebeck but differs by the legs being brown or black, the



Figs. 1–7. Wing venation: 1, *Mirax malcolmi*, n. sp.; 2, *Apanteles oatmani*, n. sp.; 3, *Bracon lucileae*, n. sp.; 4, *Orgilus jennieae*, n. sp.; 5, *O. parvus* Turner; 6, *Chelonus* (*Microchelonus*) *kellieae*, n. sp.; 7, *C. (M.) johnei*, n. sp.

antennae black, and the radius being angled with the intercubitus. The legs of *ferus* are testaceous and the radius is on a straight line with the intercubitus. This species is named for my wife, Jennie Suderman Marsh.

Orgilus parvus Turner

Orgilus parvus Turner, 1922. Ann. Mag. Nat. Hist. (Ser. 9) 10: 276.

Diagnosis.—Length of body, 3.5–4.0 mm; ovipositor, 2.5–3.5 mm. Color: head, thorax, and abdomen black, basal flagellomeres dark brown, apex of fore femur, fore tibia and tarsus brown, middle tibia and tarsus dark brown, wings uniformly lightly infumated. Face coarsely punctate and shining, temples and vertex smooth and shining, frons weakly rugose; mesonotum coarsely punctate and shining; abdominal terga one and two completely rugose, third tergite weakly rugose medially at base; ovipositor as long as abdomen plus $\frac{1}{2}$ thorax; second segment of radius slightly angled with intercubitus, nervulus only slightly postfurcal, hind wing (fig. 5) about 6 times as long as wide.

Type locality.—Mossel Bay, Cape Province, South Africa.

This species is similar to the Nearctic *Orgilus arcticus* Muesebeck but is easily distinguished by the smooth and shining temples and vertex, and the wing venation, particularly the angle of the radius and intercubitus (they are on a straight line in *arcticus*) and the nervulus being postfurcal by about $\frac{1}{3}$ its length. It is also similar to *O. jenniae* described above but differs in its black legs, narrower hind wing, and more strongly sculptured second abdominal tergite.

Orgilus parvus was introduced from South Africa and released in 1968 at Moreno Valley, Riverside County, California, against the potato tuberworm. It was colonized but apparently not established (E. R. Oatman, pres. comm.). Further surveys in this area for potato tuberworm parasites are being made and this species is included here in the event it does become established.

Chelonus (*Microchelonus*) *kellieae* Marsh,
new species

Female. Length of body, 3.0 mm. Color: entire body black except for scape, pedicle, base

of first flagellomere, apex of fore femur, fore tibia, fore basitarsus, base and apex of middle femur, middle tibia, middle basitarsus, base and apex of hind femur, and basal $\frac{2}{3}$ of hind tibia which are honey yellow. Head: slightly wider than long; face granular and dull, clypeus weakly granular and shining, frons rugose, a definite carinate ridge between antennae extending half way down face, vertex rugulostriate, temples finely striate, malar space about equal to length of first flagellomere, antenna 16 segmented, short, not extending beyond propodeum, flagellomeres 12–15 as wide as long, level of lower eye margins slightly above dorsal margin of clypeus. Thorax: mesonotum rugose, somewhat areolate where notauli meet before prescutellar furrow, mesonotal lobes granular, mesopleuron rugose, areolate; propodeum rugose, caudal margin defined by transverse ridge, outer pair of projections large and distinct, inner pair weak. Abdomen: carapace rugose basally, rugulose apically, basal carinae short but distinct, apex of ventral opening reaching about to apex of carapace. Wings (fig. 6): stigma about as long as wide, radial cell along wing margin half as long as stigma, first and second segments of radius about equal in length.

Male. Essentially as in female; opening at apex of carapace (fig. 8) somewhat flattened heart-shaped, about 2.5 times wider than high, center tubercle with scattered short hair, carapace formed into a low rounded tubercle below this apical opening.

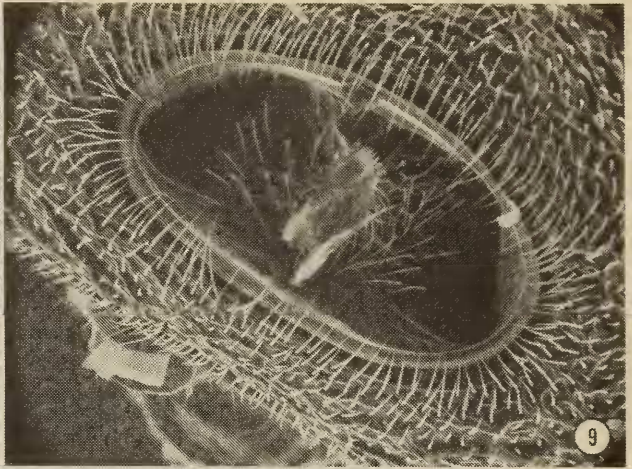
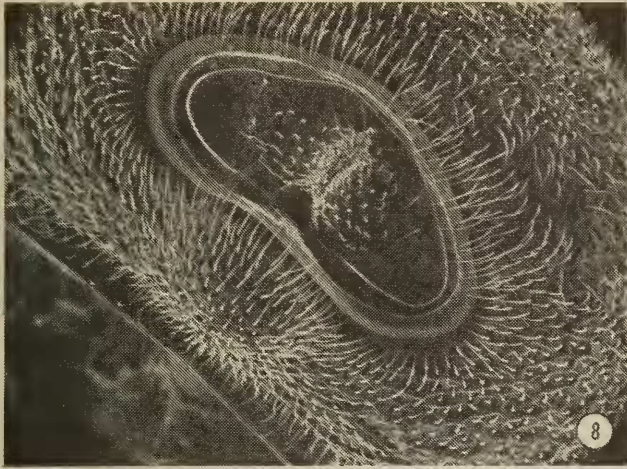
Holotype.—Female, Cartago, Costa Rica, April 1973, coll. E. R. Oatman. Deposited in USNM.

Paratypes.—17 ♀♀, 20 ♂♂, same data as holotype; 5 ♀♀, 8 ♂♂, Cartago, Costa Rica, 4-25-73, E. R. Oatman, ex Gelechiid on potato. Deposited in USNM and UCR.

This species is similar to the Nearctic *Chelonus* (*Microchelonus*) *cosmopteridis* McComb, both species having striate temples, but *kellieae* differs from *cosmopteridis* by having a shorter radial cell which is half as long as stigma, and shorter apical flagellomeres which are as wide as long. It does not appear to be similar to any of the described Neotropical species. This species is named for my daughter, Kellie Lynée Marsh.

Chelonus (*Microchelonus*) *johni* Marsh,
new species

Female. Length of body, 3 mm. Color: black except scape, apex of fore femur, fore tibia, fore



Figs. 8–9. Opening at apex of male carapace, *Chelonus* (*Microchelonus*) species: 8, *kellieae*, n. sp.; 9, *johni*, n. sp.

basitarsus, apex of middle femur, middle tibia, middle tarsus, basal $\frac{1}{2}$ of hind tibia, and hind basitarsus which are honey yellow. Head: wider than long, entirely striate, clypeus granular and shining medially; malar space slightly longer than first flagellomere; antenna 16 segmented, short, not quite reaching base of propodeum, flagellomeres 10–15 as wide as long; level of lower eye margins slightly above dorsal margin of clypeus. Thorax: mesonotum rugose, strongly areolated where notauli meet, along notauli, and along median line of middle mesonotal lobe; mesopleuron strongly rugose and areolate; propodeum rugose, caudal margin defined by strong transverse ridge, both pair of projections strong. Abdomen: carapace strongly rugose and areolate, particularly at base, basal carinae strong and reaching to basal $\frac{1}{4}$ of carapace; apex of ventral opening reaching almost to apex of carapace. Wings (fig. 7): stigma twice as long as wide; radial cell along wing margin $\frac{3}{4}$ as long as stigma; first and second segments of radius about equal in length.

Male. Essentially as in female; opening at apex of carapace (fig. 9) evenly oval, about 1.5 times wider than high, inner tubercle with scattered long hair.

Holotype.—Female, Palmira, Colombia, So. America, 5-8-73, coll. E. R. Oatman, gelechiid on *Solanum* sp. Deposited in USNM.

Paratypes.—4 ♀♀, 5 ♂♂, same data as holotype; 1 ♀, 1 ♂, Palmira, Colombia, 9-15-75, A. Saldarriaga, ex. *Scrobipalpula* sp. on *Solanum saponaceum*. Deposited in USNM and UCR.

This species is similar to *Chelonus* (*Microchelonus*) *kellieae* but is distinguished by the longer radial cell which is $\frac{3}{4}$ as long as stigma, and the stronger

sculpturing on the mesonotum and head. It is named for my father-in-law, Mr. John H. Suderman.

Apanteles oatmani Marsh, new species

Female. Length of body, 2.5 mm; ovipositor, 1 mm. Color: black except palpi, apical $\frac{2}{3}$ of fore femur, fore tibia, fore tarsus, apex of middle femur, middle tibia, middle tarsus, hind trochanter 2, and basal $\frac{1}{2}$ of hind tibia which are honey yellow; stigma brown and margined on all sides by darker brown. Head: distinctly punctate, densely covered with short white hair; malar space shorter than clypeus; face only slightly narrower at clypeus than at antennae, at its narrowest part equal to eye height; antenna about equal to body length. Thorax: mesonotum distinctly punctate, punctures dense along course of notauli and somewhat rugose posteriorly, densely covered with short white hair; disc of scutellum flat, shining, slightly punctate, polished area on lateral face of scutellum semicircular; propodeum rugose, central areola strongly margined by carinae, occasionally open at base, costulae absent; meso- and metapleuron smooth and shining. Wings (fig. 2): stigma broad, about 2.5 times as long as broad; metacarpus longer than stigma; radius longer and slightly narrower than intercubitus; nervellus of hind wing slightly curved toward wing base, vanal lobe straight or slightly convex and without fringe of hair. Legs: inner spur of hind tibia considerably longer than outer and as long as $\frac{1}{2}$ hind basitarsus. Abdomen: first tergite slightly longer than apical width, sides parallel or very slightly bulging medially, base and apex of equal width, strongly rugose, occasionally a slight median depression indicated at apex; second tergite extremely short, about 5.5–6.0 times as wide as long, rugose, suture between second and third terga strongly crenulate; hypopygium acute and extending beyond apex of abdomen; ovipositor about as long as hind tibia, slightly evenly curved downward.

Male. Essentially as in female except antenna longer and legs darker.

Holotype.—Female. Palmira, Colombia, Sept. 15, 1975, A. Saldarriaga V., ex. *Scrobipalpula* sp. on *Solanum saponaceum*. Deposited in USNM.

Paratypes.—7 ♀♀, 4 ♂♂, same data as holotype. Deposited in USNM and UCR.

This species is distinguished by its very short second abdominal tergite which is about 6 times as wide as long. It appears to be similar to the Neotropical *Apanteles bruchi* Blanchard but differs by the black tegula and rugose second abdominal tergite. This species is named for Earl R. Oatman.

***Bracon lucileae* Marsh, new species**

Female. Length of body, 2.0–3.0 mm; ovipositor, 0.50–1.25 mm. Color: entirely honey yellow except antenna, ocellar triangle, and ovipositor sheaths which are black, and apical segments of fore and middle tarsi, apex of hind tibia, and entire hind tarsus which are brown; wings lightly infuscated on basal half, veins brown, stigma light brown, transparent and edged with dark brown. Head: entirely smooth and polished; eyes large and bulging well beyond temples which are strongly receding; malar space about $\frac{1}{2}$ eye height and with a distinct smooth groove extending from base of eye to base of mandible; transverse diameter of circular mouth opening nearly as long as distance from opening to eye; antenna 26–29 segmented. Thorax: smooth and polished; notauli weakly indicated at least anteriorly and thickly hairy; sternaulus absent; propodeum without any indication of median carina, with a smooth oblique groove under each spiracle. Abdomen: entirely smooth and polished; first tergite about 1.25 times longer than apical width, central and oblique furrows smooth; suture between second and third terga smooth and slightly arched medially; ovipositor about $\frac{1}{2}$ as long as abdomen. Wings (fig. 3): second segment of radius nearly 3 times as long as first. Legs: tarsal claws with large basal tooth.

Male. Essentially as in female; length of body, 1.5–2.5 mm; antenna 25–30 segmented; apical abdominal segments sometimes marked with black.

Holotype.—Female. Palmira, Colombia, Sept. 15, 1975, A. Saldarriaga V. collector, ex. *Scrobipalpula* sp. on *Solanum saponaceum*. Deposited in USNM.

Paratypes.—6 ♀♀, 4 ♂♂, same data as holotype. Deposited in USNM and UCR.

This species is similar to the Nearctic *Bracon psilicorsi* Viereck but is distinguished by its entirely yellow body, lack of oblique furrows on second abdominal tergite, and strongly receding temples. It is also similar to *B. vulpinus* Szépligeti from Brazil but differs by the entirely smooth second abdominal tergite. This species is named for my mother, Lucile Garges Marsh.

***Mirax malcolmi* Marsh, new species**

Female. Length of body, 2.0–2.5 mm; ovipositor, 0.5 mm. Color: face and temples honey yellow, vertex brown, occiput black, antenna black, palpi whitish, thorax black, abdomen black beyond second segment, median plate of first tergite honey yellow, median plate of second tergite brown, lateral parts of second tergite black, membranous areas of first and second tergites whitish-yellow, ovipositor sheaths black; wings lightly infuscated, stigma black, tegula and wing base honey yellow; legs yellow, apical tarsal segments brown. Head: face lightly punctate, vertex and temples more strongly punctate; vertex with a weak polished groove extending from median ocellus to occiput; frons with a slight raised ridge extending between antennae a short distance down face; temples about as wide as eyes and not receding behind eyes, bulging slightly; antenna 14 segmented, first and second flagellomeres about equal in length. Thorax: mesonotum and scutellum mostly smooth with only scattered punctures; notauli deeply impressed anteriorly, absent posteriorly; mesopleuron smooth and polished, sternaulus represented by a wide, shallow, rugulose impression; propodeum coarsely rugose with strong median carina; metapleuron and sides of propodeum smooth. Abdomen: plate of first tergite smooth, very narrow on basal $\frac{1}{2}$, suddenly widening near apex and then narrowing at apex (i.e., somewhat spoon-shaped); second tergite mostly membranous, median plate smooth, narrow at base, gradually widening to apex and then extending across entire apex of tergite; remainder of tergites smooth; ovipositor about as long as hind basitarsus. Wings (fig. 1): cubitus weak or absent at base so first cubital and first discoidal cells are not completely separated; radius almost completely absent.

Male. Essentially as in female.

Holotype.—Female. Palmira, Colombia, Sept. 15, 1975, A. Saldarriaga V. collector, ex. *Scrobipalpula* sp. on

Solanum saponaceum. Deposited in the USNM.

Paratypes.—6 ♀♀, 6 ♂♂, same data as holotype. Deposited in the USNM and UCR.

This species is easily distinguished from the only other described Neotropi-

cal species, *Mirax brasiliensis* Brues and *M. insularis* Muesebeck, by its dark thorax. In North America it is similar to *M. lithocolletidis* Ashmead but is distinguished by its darker color and more coarsely rugose propodeum. This species is named for my father, Malcolm B. Marsh.

Natural History Notes on Craspedoglossa stejnegeri and Thoropa petropolitana (Amphibia: Salientia, Leptodactylidae)

W. Ronald Heyer and Ronald I. Crombie

Division of Reptiles and Amphibians, Natural History Building, Smithsonian Institution, Washington, D. C. 20560.

ABSTRACT

Larvae are described for the first time for the burrowing leptodactylid frog, *Craspedoglossa stejnegeri*. The terrestrial larvae resemble those of *Zachaeus parvulus* in several distinctive features. Territoriality is described for the first time for any frog in SE Brazil; male *Thoropa petropolitana* defend calling sites and egg clutches.

During the month of December 1977, we obtained some natural history observations on previously unreported life history parameters for *Craspedoglossa stejnegeri* and *Thoropa petropolitana*. Our observations were made near the city of Teresópolis in the State of Rio de Janeiro, Brazil. Specimens are in the collections of the Museu de Zoologia da Universidade de São Paulo and the National Museum of Natural History, Washington, D. C.

Craspedoglossa stejnegeri

We obtained a series of 29 juvenile and adult *C. stejnegeri* from burrows in hillsides or under logs. During the day, specimens were found in the burrow

systems under logs. At night, the frogs were near the mouths of the burrows. In six cases, *Craspedoglossa* and microhylids (a single species, as yet unidentified) shared the same burrows; four of the burrows contained one microhylid and one *C. stejnegeri*, two burrows, two microhylids and one *C. stejnegeri*.

On the morning of 10 December, the second author found a female *C. stejnegeri* with 40 larvae on her back under a 15 cm. diameter log beside a stream. The female sat in a depression below the level of the surrounding soil. Egg capsules were next to the female and one egg had been parasitized. The egg capsules were in a bead-like string. The larvae were very light in color, the yellow yolk being the most striking feature.